

CSDA Best Practice



Title: Slurry
Issue No: CSDA-BP-001
Effective Date: Jun 21, 2006
Revised Date: Jan 21, 2008

Introduction

Water/slurry collection, disposal and recycling for concrete sawing and drilling are becoming more of an issue for the industry. Each city, county, state, province and country is developing its own regulations and means to enforce them. Since there is no single standard to deal with water and concrete slurry, it is important for our association to take proactive efforts in dealing with our tools, techniques and procedures as well as with a growing list of regulations and enforcement groups who want to oversee them.

The purpose of this “best practice” document for slurry is to start a database of tools and ideas for dealing with concrete slurry and to address industry and environmental concerns. With the aid of our members reviewing and contributing to this database, hopefully we, as an association, can gain a better understanding of the issues relating to water usage, runoff and slurry. With this understanding, we will then be able to use the right tools and techniques to improve slurry collection, recycling and proper disposal.

Table of Contents

1. Pre-Bid Considerations
2. Pre-Job Planning
3. Collection and Control Devices
4. Water Collection Tips and Additives
5. Storage Containers
6. Hauling Tips
7. Filtration Devices and Techniques
8. Recycle Tools and Systems
9. How to Dry Out Slurry
10. Disposal Options and Considerations
11. Regulations and Fines
12. Testimonials
13. Results of the CSDA Standards & Specifications Meeting Survey
14. Concrete Slurry Analysis, an Engineering Report

Slurry Tips

1. Pre-Bid Considerations

- a. What does the prime contractor and/or owner require?
- b. Are criteria documented in specifications or proposed contract?
- c. What regulations are in force for this project?
- d. Is there an approved dumpsite?
- e. Who is responsible for collection, handling and disposal?
- f. Are you adding tools, materials & labor to your bid to handle slurry?
- g. Is there construction water available?
- h. Can you let slurry/water “run off”?

2. Pre-Job Planning

- a. Does your firm and prime/owner agree on slurry control?
- b. Do your operators know what is required?
- c. Will “slurry controls” interfere with other work?
- d. Will slurry controls improve the safety of your workers?
- e. What special tools and supplies do you need for the job?
- f. Check out the supplies available at Web sites like www.newpig.com.
- g. Get your collection system set up prior to sawing or drilling.

3. Collection and Control Devices

- a. Determine “low point” of specific work area and let “gravity help out.”
- b. Enclose work areas with poly, to what level is required, if any.
- c. Clearly mark “wet areas” with caution tape and restrict access by others.
- d. Use “pigs” gutters etc to direct slurry to collection point.
- e. Squeegees, mops, brooms will likely be needed, especially for sawing.
- f. Vacuums can be big or small, but 55-gallon drum vacs are very common and facilitate the settling of slurry and later handling of sludge.
- g. Attachments to vacuum hoses can really help collect water/slurry when core drilling. “Slurry Slurp” circular plastic devices allow suction to the wall or floor, along with sending effluent to wet-vac drum. Some contractors modify plastic containers for core drilling collection.
- h. There are some attachments for saws, including “trial system” by Husqvarna.
- i. Some collection devices are designed to recycle at the core drill.
- j. Dry drilling and sawing systems are available but add the need to control dust.
- k. Large vacuum trucks and other mobile devices are available to handle road jobs. Some large systems utilize centrifuges.
- l. Gutters around wire cut lines can reduce water needs and ease the means of properly wetting the wire, along with controlling the spray and making collection more efficient.

Issue No.	Title	Rev.	Effective Date	Page
CSDA-BP-001	Slurry	2	Jan 21, 2008	Page 2 of 5

4. Water Collection Tips and Additives

- a. Reduce water input to tool, within manufacturer guidelines.
- b. Spray water versus constant flow.
- c. Blade water delivered at the flange claims to reduce water needs.
- d. Limit water to cut point of contact.
- e. Utilize full blade guard to maximize use of water and limit spray.
- f. Surfactants will make water “wetter” and allow reduction of water needed.
- g. Softeners and soap will improve “water tension” and reduce volume needs
- h. When recirculating or recycling, acidic products will be needed to control high pH. Note that high pH or highly alkaline solutions are irritating to skin. The more you recirculate, the higher the pH can get.

5. Storage Containers

- a. 55-gallon drums are very common and water may be decanted off after settling. Drum dollies help movement of barrels.
- b. Large (200-500 gallon or more) plastic containers are readily available. If located below tool location, they can be gravity filled. You may wish to perform initial collection with drum-vacs, then pump to the larger container.
- c. Vacuum truck services are available in many areas.
- d. 20- and 40-yard dumpsters are utilized on large projects and can be divided into 2-4 sections to allow slurry water to move from one end to the other, causing much of the solids to settle out.
- e. Spoil areas may be provided by owner to temporary or permanent storage.
- f. Note: Regardless of how you collect or store the slurry, you need a plan for where it is properly disposed.

6. Hauling Tips

- a. Decant the water prior to moving.
- b. Use a large truck-mounted container / plastic tank.
- c. Subcontract to waste hauler / super-sucker trucks.
- d. Solidify first (see following sections).

7. Filtration Devices and Techniques

- a. Use weirs in a large container, or drain from one barrel to the next, until enough solids have settled out.
- b. Merely let water or slurry settle in a barrel, then suck off clear water with a vacuum (removing water with a pump will reagitate the slurry).
- c. Many types of filter cloths and screens are available to protect all drains, as a minimum.
- d. Hay bails can be used in your run-off area or even within a large container to collect some of the slurry.
- e. “Pigs” and other media are available from vendors like www.newpig.com.
- f. Flocculants are available to accelerate settling of solids.

Issue No.	Title	Rev.	Effective Date	Page
CSDA-BP-001	Slurry	2	Jan 21, 2008	Page 3 of 5

8. Recycle Tools and Systems

- a. Core drill recycle kits are available from Diamond Products, Hilti and others.
- b. "Do-it-yourself" via filters and devices previously listed.
- c. Truck-mounted systems are available to handle large jobs.
- d. Subcontract out to a specialist.
- e. Skid-mounted systems are being used by some members, combining gravity drained barrels with diaphragm pumps and standard filter tanks; filters are easily replaceable and currently take solids down to 5 microns.

9. How To Dry Out Slurry

- a. Evaporation--only if large area and time are available.
- b. Add fly ash, which is readily available from coal power plants and some stores.
- c. SP400 water crystals are commercially available.
- d. Cement is used but is more expensive than fly ash.
- e. Heated drum evaporators are fairly common at nuclear facilities.

10. Disposal Options and Considerations

- a. Ask before dumping on your client's site or anywhere else.
- b. Utilize a regulated landfill.
- c. Dispose on your own property, if within regulations.
- d. Treat slurry for high alkalinity (low pH) prior to disposal.
- e. Avoid runoff into streams, lakes or drain systems.
- f. Some concrete batch plants will accept the slurry.
- g. Solidify or dry out prior to disposal.

11. Regulations and Fines

- a. The list of local, county, state & federal regulations is growing, but enforcement is currently limited.
- b. Fines in Australia and New Zealand are much more common than in the USA, but Western USA states are becoming more strict.
- c. The National Pollutant Discharge Elimination System (NPDES) standard, issued by the U.S. Environmental Protection Agency, sets stringent standards on disposing of potential pollutants. It addresses regulations for handling debris that ends up on land and waterways (cfpub.epa.gov/npdes/about.cfm).

12. Testimonials

- a. A New Zealand CSDA contractor operates his own vacuum trucks and charges 30% of job cost to dump at a controlled location if one is not readily available on the job site.
- b. A U.S. contractor is located next to a concrete batch plant and has an agreement to dump all his slurry there.
- c. Another member subcontracts large slurry jobs out to a specialist. He cautioned on checking for license of hauler as any lawsuits will name all parties involved.
- d. Some areas or times of year have water shortages and recycling of water is needed to meet requirements.
- e. One member uses air-powered misters to cool wires for cutting metal structures. Very small amounts of water are drawn into mister with a thin plastic tube.
- f. Another member puts silt curtains in the water around cutting area to control movement of solids.

Issue No.	Title	Rev.	Effective Date	Page
CSDA-BP-001	Slurry	2	Jan 21, 2008	Page 4 of 5

13. Results of October 14, 2004 CSDA Standards & Specifications Meeting Survey

An informal survey was filled out by 17 participants at the October 14, 2004, CSDA quarterly Board and committee meetings. Questions and results were as follows:

1. I have (little, a lot) need for slurry collection devices.
Little = 8, A Lot =7, Blank = 2 participants
2. I need (little, a lot) of assistance with recycle of water/slurry.
Little = 10, A Lot = 5, Blank = 2 participants
3. I would like CSDA to further this topic and make input available to our members (Yes, No).
Yes = all 17 participants
4. Quiz: "Highly alkaline solutions" have a low pH value (True, False).
True = 2, False = 15 (correct answer is False)
5. I would rather settle water and slurry with drums or containers than deal with filter systems (True, False).
True = 5, False = 10, no answer = 2
6. I am a (contractor, manufacturer, other).
Contractors = 7, Manufacturer = 8, Other = 2
7. I am not aware of local, state or federal regulations for water and slurry controls (True, False).
True = 8, False = 9
8. It is not likely that I will ever be fined for water/slurry controls (True, False).
True = 5, False = 12
9. This topic should be a (low, medium, high) priority for CSDA.
Low = 0, Medium = 8, High = 9

14. Concrete Slurry Analysis, an Engineering Report

CSDA offers a 62-page report entitled Chemical Characterization of Concrete Slurry Samples and Development of Guidelines for Slurry Management from an independent engineering firm. The study was conducted to initiate a compilation of baseline criteria to assist in the establishment of guidelines for management of slurry as a hazardous or non-hazardous waste material. For information or to place an order, call CSDA at 727-577-5004.

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Issue No.	Title	Rev.	Effective Date	Page
CSDA-BP-001	Slurry	2	Jan 21, 2008	Page 5 of 5